

1. GENERAL

1.1 General And Related Work

- 1.1.1 All sections of the specifications form a part of the Contract Documents and shall be read to determine their effect upon the work of this section.
- 1.1.2 This specification fulfils the requirements of the report required by R.R.O. 2005, Reg. 278 as amended by O. Reg. 510/92, Section 10.
- 1.1.3 Related work specified elsewhere:
Division 2, General Conditions:
Section 028210- Type 1 Asbestos Removal
- 1.1.4 It is the intent that work performed as per this section will result in the removal and disposal of all ACM specified for removal and the decontamination of all materials that have been contaminated by ACM either during or prior to work of this section.
- 1.1.5 This specification document should be read in conjunction with the "Limited Designated Substance Survey Report Rv.1" prepared by Maple Environmental (dated January 29, 2024).

1.2 Project Summary

In general terms, the scope of the project involves a flooring, window, and interior door replacement project based on architectural drawings prepared by Synder Architects on behalf of the Halton Catholic District School Board.

1.3 Site Conditions

- 1.3.1 Refer to Section 028210 for details.

1.4 Outline of Work

- 1.4.1 Using Type 3 procedures as specified remove and dispose of all asbestos-containing ceramic floor tile mortar base in the Type 3 Work Area as indicated on Drawing AR-01.
- 1.4.2 There is approximately 5,500 square feet of asbestos-containing ceramic floor tile mortar base to be removed using Type 3 Asbestos Abatement Procedures.**
- 1.4.3 Abatement Contractor is responsible for all take-offs.
- 1.4.4 Refer to Figure 1 below for examples of different views of ACM ceramic floor tile mortar base to be removed.



Figure 1: Examples of different ACM ceramic tile mortar base to be removed.

- 1.4.5 Abatement contractor to include the removal and disposal of associated ceramic floor tiles and grout. Ceramic floor tiles and grout are to be disposed of as asbestos waste.
- 1.4.6 Dispose of as asbestos waste, all materials removed by work of this Section, unless specified otherwise.
- 1.4.7 Abatement contractor is responsible to remove ceramic tile mortar base in the Boy's and Girl's Washrooms where the material is applied as a wall base.
- 1.4.8 Abatement Contractor is to remove and dispose of the vinyl baseboards in the Work Areas. Vinyl baseboards may be disposed of as clean waste.
- 1.4.9 Doors to classrooms, storage rooms, etc. (i.e. bordering the asbestos Work Areas) are to be removed or temporarily secured open in order to facilitate the removal of asbestos-containing ceramic floor tile mortar base from the Corridors.

- 1.4.10 Door openings to classrooms, storage rooms, etc. (bordering the asbestos Work Areas) to be sealed with a minimum of one layer of rip proof polyethylene sheeting and tape. Provide additional layers of polyethylene and/or wood or metal supports as required.
- 1.4.11 Seal all floor drains in Washrooms with tape.
- 1.4.12 Construct a three (3) chambered Worker Decontamination Unit (including a shower) at the entrance to the Work Areas with appropriate signage and Notice of Project (NOP).
- 1.4.13 Protect surfaces, building fabric and items not specified for removal remaining within Asbestos Work Area, including walls, ceilings, windows, door openings, etc. with a minimum of one layer of rip proof polyethylene sheeting and tape.
- 1.4.14 Locations of wall mounted fire pull stations and defibrillators are to be clearly identified/labelled on wall polyethylene. Secure an exacto knife to wall polyethylene in these locations in the event that the contractor requires access to these items during an emergency.
- 1.4.15 Existing lighting may be utilized in Work Area provided it is sealed with clear polyethylene and tape.
- 1.4.16 Provide additional temporary lighting in the Work Area as required.
- 1.4.17 Disable air handling system affecting asbestos Work Area. The air handling system shall not be enabled until completion of work.
- 1.4.18 Ensure there is an adequate number of negative air units within the Work Area to establish appropriate negative air pressure.
- 1.4.19 Ensure the exposed concrete floor is left clean, dry, and free of residual ceramic floor tile mortar base upon completion of the removal of the ceramic floor tiles and grout.
- 1.4.20 Make good, all damage to concrete substrate created by work of this project that would affect the installation of new flooring materials. The abatement contractor is not responsible to prepare the sub floor to accept new flooring, rather they are only required to repair any damages caused during the abatement process.
- 1.4.21 General Contractor to complete the following in the Work Area to facilitate removal of asbestos-containing ceramic tile mortar base:**
 - 1.4.21.1 Remove and dispose of partition stall walls in Washrooms.
 - 1.4.21.2 Disconnect toilets and sinks as required.
 - 1.4.21.3 Supply, cut, and measure material for rigid hoarding to be installed over window openings by the abatement contractor.
- 1.4.22 The Owner is responsible to complete the following items in order to facilitate the removal of asbestos-containing ceramic tile mortar base:**
 - 1.4.22.1 Re-locate all contents, furniture, and miscellaneous items where present within the Work Areas.

1.5 **Schedule**

- 1.5.1 Ensure work proceeds to schedule, meeting all requirements of this specification.
- 1.5.2 Asbestos abatement is anticipated to occur over two phases of work as depicted on Drawing AR-01.
- 1.5.3 The first phase of abatement will encompass the Work Areas on the north portion of the building between July 8, 2024 to July 21, 2024.
- 1.5.4 The second phase of abatement will encompass the Work Areas on the south portion of the building between July 22, 2024 to August 4, 2024.
- 1.5.5 Hours of abatement work are not restricted. Abatement is permitted to occur during regular hours, after hours, and on weekends at the contractor's discretion.
- 1.5.6 Project schedule to be coordinated in conjunction with the Owner and the General Contractor.

1.6 **Supervision**

- 1.6.1 Provide an on-site Superintendent that has the authority to oversee all aspects of the work, including but not limited to, negotiation of changes to the contract, scheduling, manpower, equipment, production, and communication and co-ordination with Asbestos Abatement Consultant.
- 1.6.2 The Asbestos Abatement Consultant reserves the right to reject or accept any Superintendent without explanation.
- 1.6.3 Supervisory personnel must hold a recognized certificate proving certification as an Asbestos Supervisor in the province of Ontario as required by Regulation 278/05 (253-S), and have supervised a minimum of five (5) other asbestos abatement projects.
- 1.6.4 Supervisory personnel must be on site at all times during work that may disturb ACM.
- 1.6.5 The Contractor cannot replace supervisory personnel without written approval from the Asbestos Abatement Consultant.

1.7 **Quality Assurance**

- 1.7.1 Ensure the removal and handling of ACM or asbestos contaminated materials is performed by trained and competent personnel having obtained certification to perform work in a Type 3 Operation in the Province of Ontario as required by Regulation 278/05. The Asbestos Abatement Consultant reserves the right to remove any personnel that, in their opinion, does not meet these qualifications.
- 1.7.2 All related work of this section shall be performed by licensed persons, experienced and qualified for the work required.
- 1.7.3 The Asbestos Abatement Consultant is empowered to order work to stop when a breach of the containment enclosure has, or is likely to occur. Cost of additional work by Contractor and/or Asbestos Abatement Consultant to remedy conditions shall be the burden of the Asbestos Abatement Contractor.

1.7.4 The Asbestos Abatement Contractor is solely responsible for the control of the project, construction practices, his Subcontractors or their agents, employees or other persons performing any of the Work.

1.8 Definitions

1.8.1 **Airlock:** a system for permitting ingress or egress without permitting air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways at least 1.5 m apart.

1.8.2 **Air Monitoring:** The process of measuring the fibre content of a specific volume of air.

1.8.3 **Amended water:** water with a non-ionic surfactant wetting agent added to reduce water surface tension to 35 or less dynes, to allow thorough wetting of asbestos fibres.

1.8.4 **Asbestos:** The asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbestiform and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.

1.8.5 **Asbestos Abatement Consultant:** The Owner or person designated by the owner to provide inspection and air monitoring of the Contractor's work.

1.8.6 **Asbestos-Containing Material (ACM):** Any material containing asbestos of any type or mixture of types.

1.8.7 **Asbestos-Containing Waste Material:** Any material which is or is suspected of being or any material contaminated with an asbestos-containing material which is to be removed from a work area for disposal.

1.8.8 **Asbestos debris:** Pieces of ACM that can be identified by colour, texture, or composition, or means dust, if the dust is determined by an accredited Asbestos Abatement Consultant to be ACM.

1.8.9 **Asbestos Work Area:** where the actual removal, sealing and enclosure of asbestos-containing materials takes place.

1.8.10 **Authorized Visitor:** the Owner or his approved representative and/or persons representing regulatory agencies.

1.8.11 **Barrier:** Any surface that seals off the work area to inhibit the movement of fibres.

1.8.12 **Clean Area:** Either an operating area or an area in which removal work has already been completed.

- 1.8.13 **Curtained Doorway:** an arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed by placing two overlapping sheets of polyethylene over an existing or temporarily framed doorway, securing each along the top of the doorway, securing the vertical edge of one sheet along one vertical side of the doorway, and securing the vertical edge of the other sheet along the opposite vertical side of the doorway. All free edges of polyethylene shall be reinforced with duct tape and the bottom edge shall be weighted to ensure proper closing. Each polyethylene sheet shall overlap openings not less than 1.5 m on each side.
- 1.8.14 **Demolition:** The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operations.
- 1.8.15 **Disposal Bag:** A properly labelled 6 mil thick leak-tight plastic bag used for transporting asbestos waste from the work area to the disposal site.
- 1.8.16 **D.O.P. Test:** Dioctylphthalate aerosol challenge of a HEPA filter system and is used to establish the integrity and effectiveness of the system to filter out asbestos fibres.
- 1.8.17 **Encapsulant:** A material that surrounds or embeds asbestos fibres in an adhesive matrix, to prevent release of fibres.
- 1.8.17.1 **Bridging Encapsulant:** an encapsulant that forms a discrete layer on the surface of an in situ asbestos matrix.
- 1.8.17.2 **Penetrating Encapsulant:** an encapsulant that is absorbed by the in situ asbestos matrix without leaving a discrete surface layer.
- 1.8.17.3 **Removal Encapsulant:** a penetrating encapsulant specifically designed to minimize fibre release during removal of asbestos-containing materials rather than for in situ encapsulation.
- 1.8.18 **Encapsulation:** Applying to asbestos-containing materials, with an encapsulant.
- 1.8.19 **Filter:** A media component used in respirators, vacuum cleaners or negative pressure filter fan units to remove solid or liquid particles from the inspired air.
- 1.8.20 **Fitting:** Unless otherwise described in Site Conditions, all connections of a pipe which include elbows, ends, caps, valves, hangers, tees and unions.
- 1.8.21 **Friable Asbestos Material:** Material that contains asbestos that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.
- 1.8.22 **Glove Bag:** A sack with inward projecting long sleeve gloves, which are designed to enclose an object from which an asbestos-containing material is to be removed.
- 1.8.23 **HEPA Filter:** High Efficiency Particulate Aerosol filter that is at least 99.97 percent efficient in collecting a 0.3 micrometre aerosol.

- 1.8.24 **Negative Pressure:** a system which extracts air directly from work area, filters such extracted air through a High Efficiency Particulate Air filtering system, and discharges this air directly outside work area to exterior of building. This system shall maintain a minimum pressure differential of 0.03 inches Water Gauge relative to adjacent areas outside of work areas, be equipped with an alarm to warn of system breakdown, and be equipped with an instrument to continuously monitor and automatically record pressure differences.
- 1.8.25 **Negative Pressure Respirator:** A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.
- 1.8.26 **Occupied Area:** Any area of the building outside the Asbestos Work Area.
- 1.8.27 **Polyethylene:** sheeting of type and thickness specified sealed with tape along all edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide a continuous polyethylene membrane to protect underlying surfaces from water damage or damage by sealant, and to prevent escape of asbestos fibres through the sheeting into a clean area.
- 1.8.28 **Positive Pressure Respirator:** A respirator in which the air pressure inside the respiratory inlet covering is positive during inhalation and exhalation in relation to the air pressure of the outside atmosphere.
- 1.8.29 **Respirator:** A device designed to protect the wearer from the inhalation of harmful atmospheres.
- 1.8.30 **Straight Run Pipes:** Part of the building system not included under the description of Fitting, including but not limited to straight, angled or curved sections of pipe, pumps, headers and reducers.
- 1.8.31 **Surfactant:** A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
- 1.8.32 **Water Filtration System:** A multi-stage filtration system for filtering shower and wastewater. Typically constructed with at least two filters, the primary stage retains 20 microns or larger particles and the final stage removes 5 micron or larger particles.
- 1.8.33 **Wet Cleaning:** The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos-contaminated waste.
- 1.8.34 **Work:** Includes all services, labour and material required to complete the work as specified in the contract.

1.9 Regulations

- 1.9.1 Comply with Federal, Provincial, and local requirements pertaining to asbestos, provided that in any case of conflict among those requirements or with these specifications the more stringent requirement shall apply. The regulations shall include but not be limited to the following:

- 1.9.1.1 Ontario Ministry of Labour, Occupational Health and Safety Division, Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations, O. Reg. 278/05.
- 1.9.1.2 Ontario Ministry of the Environment Regulation 347, under the Environmental Protection Act.
- 1.9.1.3 Government of Canada Regulations respecting the Handling, Offering for Transport and Transporting of Dangerous Goods. (Extract from the Canada Gazette Part II, dated February 6, 1985).
- 1.9.1.4 Regulations for Construction Projects O. Reg. 213/91.
- 1.9.1.5 Office of the Fire Commissioner of Canada.
- 1.9.1.6 Ontario Hydro Electrical Safety Code.
- 1.9.1.7 Ontario Occupational Health and Safety Act RSO 1990 c0.1 as amended.
- 1.9.1.8 WHMIS Regulations RRO 1990 Reg. 860.

1.10 Notification

- 1.10.1 Notify the Ministry of Labour, Construction Health and Safety Branch, as per R.R.O. 2005, Reg. 278 as amended by O. Reg. 510/92, for Type 3 removal work.
- 1.10.2 Notify Sanitary Landfill site as per Ontario Regulation 347.
- 1.10.3 Inform all sub trades of the presence of friable ACM identified in the site conditions.
- 1.10.4 Notify immediately Ontario Ministry of Labour, as required by Regulation 278 as amended by O. Reg. 510/92, Section 7, if friable materials not identified in the site conditions are discovered during the project.

1.11 Submittals

- 1.11.1 Submit prior to starting work:
 - 1.11.1.1 Permits for transportation of asbestos waste and location of landfill.
 - 1.11.1.2 Names and credentials of supervisory personnel.
 - 1.11.1.3 Proof in the form of a certificate that supervisory personnel have attended a training course on asbestos removal.
 - 1.11.1.4 Proof with references that supervisory personnel have supervised at least five other asbestos removal projects.
 - 1.11.1.5 Proof that all workers performing Type 3 asbestos removal have 253-W certification cards as required by O. Reg. 278/05.
 - 1.11.1.6 Proof that workers have received WHMIS training.
 - 1.11.1.7 Work Place Safety and insurance Clearance Certificates.
 - 1.11.1.8 Proposed schedule including all stages of work (if applicable).
 - 1.11.1.9 Shop drawings for each Work Area detailing waste and worker decontamination facilities, platform and hoarding layouts, location of negative

air discharge panels, Material Safety Data Sheets for chemicals or materials used in the course of the project.

- 1.11.1.10 Negative air unit performance data and results of D.O.P. tests as required.
- 1.11.1.11 Certificate proving that each worker on site has been fit tested for the respirator appropriate for the work being performed.
- 1.11.1.12 Pre-removal survey of damage in all areas where asbestos abatement will take place or waste will be transported.
- 1.11.1.13 Ministry of Labour Notice of Project form.

1.12 Worker Protection

- 1.12.1 Prior to commencing work instruct workers in all aspects of work procedures and protective measures.
- 1.12.2 Provide workers with personally issued marked respiratory equipment acceptable to the Occupational Health and Safety Division of the Ontario Ministry of Labour, suitable for the Asbestos exposure.
- 1.12.3 Ensure that suitable respiratory protective equipment is worn by every worker who enters the Asbestos Work Area. A respirator provided by an employer and used by a worker shall be:
 - 1.12.3.1 A full-face non-powered reusable air purifying dust respirator or better, equipped with High Efficiency Particulate Aerosol (HEPA) Filters suitable for asbestos-containing dust for Type 3 Operations where the asbestos-containing materials are wetted and where sprayed asbestos is present, the spray material only contains chrysotile asbestos.
 - 1.12.3.2 Fitted so that there is an effective seal between the respirator and the worker's face;
 - 1.12.3.3 Assigned to a worker for the worker's exclusive use;
 - 1.12.3.4 Used and maintained in accordance with the procedures specified by the equipment manufacturer;
 - 1.12.3.5 Cleaned, disinfected and inspected after use on each shift, or more often if necessary;
 - 1.12.3.6 Free of damaged or deteriorated parts replaced prior to being used by a worker;
 - 1.12.3.7 Be stored in a convenient, clean and sanitary location; when not in use;
 - 1.12.3.8 Certified by the US National Institute for Occupational Safety and Health (NIOSH) or the British Standards Institution for exposure to airborne asbestos fibre.
- 1.12.4 Protective Clothing:
 - 1.12.4.1 Provide workers with full body disposable coveralls. Full body disposable type coveralls shall be:
 - 1.12.4.1.1 Worn by every worker who enters the work area,
 - 1.12.4.1.2 Made of a material which does not readily retain nor permit penetration of asbestos fibres,

- 1.12.4.1.3 full body covering including head covering with snug fitting cuffs at the wrists, ankles and neck,
- 1.12.4.1.4 Include suitable footwear,
- 1.12.4.1.5 Repaired or replaced if torn.
- 1.12.4.2 Provide other body protection required under applicable safety regulations.
- 1.12.4.3 Do not eat, drink, smoke or chew except in established locations outside the Asbestos Work Area.
- 1.12.4.4 Personnel must be fully protected at all times when possibility of disturbance of asbestos exists.
- 1.12.4.5 Provide and post in Clean Change Room the procedures described under Worker Protection.
- 1.12.5 Work Area Entry Procedures
- 1.12.5.1 Personnel and Authorized Visitors are to use the following procedures to enter contaminated Asbestos Work Area:
 - 1.12.5.1.1 Remove all clothing including undergarments and footwear in Clean Change Room.
 - 1.12.5.1.2 Put on respirator with new or tested filters, and coveralls in Clean Change Room.
 - 1.12.5.1.3 Store all street clothes, uncontaminated footwear, towels, etc. in the Clean Change Room.
- 1.12.6 Work Area Exit Procedures
- 1.12.6.1 Personnel and Authorized Visitors are to use the following procedures to exit contaminated Asbestos Work Area:
 - 1.12.6.1.1 Remove visible contamination from protective clothing using HEPA vacuum or by wet wiping.
 - 1.12.6.1.2 Proceed to Equipment and Access Room and remove all contaminated clothing and equipment except respirator.
 - 1.12.6.1.3 Store contaminated footwear, hard hats, etc. in Equipment and Access Room.
 - 1.12.6.1.4 Proceed naked to showers while still wearing respirator.
 - 1.12.6.1.5 Shower, cleaning outside of respirator with soap and water. Thoroughly wet body, head and hair, remove respirator and wash body, head and hair. Wet clean inside and outside of respirator face piece.
 - 1.12.6.1.6 Remove filters for testing or dispose as asbestos waste. Remove prior to entering the Clean Change Room.
 - 1.12.6.1.7 Cover openings on filters to be re-used with duct tape prior to entering the clean area.
 - 1.12.6.1.8 Proceed to the Clean Change Room, dry off and dress in street clothing.
- 1.13 Visitor Protection**
- 1.13.1 Provide clean protective clothing and equipment and approved respirators to Authorized Visitors.

1.13.2 Ensure Authorized Visitors have received required training for entry into Asbestos Work Area.

1.14 Air Monitoring

1.14.1 Air monitoring will be performed following the National Institute for Occupational Safety and Health method 7400.

1.14.2 The contractor shall cooperate fully with the asbestos abatement consultant in the collection of air monitoring samples, including the collection of personal worker samples.

1.14.3 Results of PCM samples of 0.05 fibres per millilitre of air (fibre/mL) or greater, outside of Asbestos Work Area, will indicate asbestos contamination of these areas. The contaminated areas shall be isolated and cleaned in the same manner applicable to the Asbestos Work Area, at no cost to the Owner.

1.14.4 Clearance air monitoring samples will be collected after a suitable settling period following application of lock-down agent. Clearance levels must be less than 0.01 fibre/mL for the Work Area to be deemed clean. Contractor to provide aggressive air sampling equipment (leaf blower and fan) for consultant's use.

2. PRODUCTS

2.1 Materials and Equipment

2.1.1 Polyethylene Sheeting: A single polyethylene film, 0.15 mm (6 mil) minimum thickness unless otherwise specified.

2.1.2 Rip Proof Polyethylene Sheeting: Woven fibre reinforced fabric bonded both sides with polyethylene sheeting. 0.20 mm (8-mil) fabric made up from 0.13 mm (5-mil) weave and 2 layers 0.04 mm (1.5-mil) poly laminate.

2.1.3 Flame-Resistant Polyethylene Sheeting: A single polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-Resistant Textiles and Films, 0.15 mm (6-mils) thickness.

2.1.4 Drop Sheets: In polyethylene type and size appropriate for the work being performed.

2.1.5 Tape: Reinforced cloth or fibreglass reinforced tape in 2" or 3" widths suitable for sealing polyethylene sheeting under both wet conditions using amended water, and dry conditions.

2.1.6 Spray Cement: Spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

2.1.7 Caulking: One component non-staining acrylic polymer sealant to conform to GSB Specification 19GP-5M.

2.1.8 Foam: Low density polyurethane expanding foam Froth-Pack or equivalent or better.

2.1.9 Wetting Agent: Non-sudsing surface active agent. Acceptable product Aqua-Gro or approved equal.

- 2.1.10 Sealer: Slow-drying sealer shall be a non-staining, clear, water dispersable type that remains tacky on the surface for a minimum of 8 hours for the purpose of trapping any residual airborne fibres during the settling period. The product must have flame spread and smoke development ratings both less than 50 and shall leave no stain when dry. Acceptable products: Borden Polyco 804, Double AD TC-55, equivalent or better. Also referred to as "Lockdown Agent".
- 2.1.11 Encapsulant: Type 1 penetrating Class A water based encapsulant conforming to CGSB 1-GP-205M and approved by the Fire Marshall having flame spread and smoke development ratings both less than fifty (50). Acceptable products: Ocean 666, Decadex Fire Check equivalent or better.
- 2.1.12 Asbestos Waste Containers: Waste shall be contained in two separate containers which shall be dust-tight and impervious to asbestos and any chemicals used during the removal process. The inner container shall be a sealable polyethylene bag (or where the glove bag method is used, the glove bag itself). Where there are sharp objects included in the waste material, the outer container shall be a sealable fibre type drum, otherwise the outer container may either be a sealable polyethylene bag. Containers shall be as follows:
- 2.1.12.1 Polyethylene Waste Bag: 0.15 mm (6 mil) thick leak-tight polyethylene bags labelled as required by sub-section 3.5 Waste Disposal.
- 2.1.12.2 Fibre Drums: 55 US gallon capacity heavy duty leak tight fibre drums with tight sealing locking metal top and metal bottom.
- 2.1.12.3 Labels: Waste containers shall have a pre-printed cautionary asbestos warning label, acceptable to local dump authorities, clearly visible when ready for removal to disposal site.
- 2.1.13 Fire Extinguishers: Provide Type "A" fire extinguishers for temporary offices and similar spaces where there is minimal danger of electrical or grease-oil-flammable liquid fires. In other locations provide type "ABC" dry chemical extinguishers, or a combination of several extinguishers of NFPA recommended types for the exposures in each case.
- 2.1.14 First Aid Supplies: Comply with governing regulations and recognized recommendations within the construction industry.
- 2.1.15 Ground Fault Panel: Electrical panel, installed by licensed electrician and equipped as follows:
- 2.1.15.1 Ground fault circuit interrupters of sufficient capacity to power temporary electrical equipment and lights in Asbestos Work Area.
- 2.1.15.2 Interrupters to have a 5 mA ground fault protection.
- 2.1.15.3 Necessary accessories including main switch disconnect, ground fault interrupter lights, test switch to ensure unit is working, and reset switch.
- 2.1.15.4 Openings sealed to prevent moisture or dust penetration.
- 2.1.16 HEPA Vacuum: Vacuum with necessary fittings, tools and attachments. Discharged air must pass through a HEPA filter.

- 2.1.17 Lock-down Agent: Sealant for purpose of trapping residual dust. Product must have flame spread and smoke development ratings both less than 50. Product shall leave no stain when dry. Lock-down agent shall be compatible with replacement insulation or fireproofing where required and capable of withstanding service temperature of substrate.
- 2.1.18 Negative Air Unit: Portable air handling system which extracts air directly from the Asbestos Work Area and discharges the air to the exterior of the Asbestos Work Area. Equipped as follows:
- 2.1.18.1 Prefilter and HEPA filter. Air must pass HEPA filter before discharge.
- 2.1.18.2 Pressure differential gauge to monitor filter loading.
- 2.1.18.3 Auto shut off and warning system for HEPA filter failure.
- 2.1.18.4 Separate hold down clamps to retain HEPA filter in place during change of prefilter.
- 2.1.19 Protective Coveralls: Disposable full body coveralls complete with hoods manufactured of a material which does not permit penetration of asbestos fibres.
- 2.1.20 Airless Sprayer: Spray equipment for amended water: for application to asbestos-containing materials for saturation prior to removal. Airless spray units are only acceptable, such as Grace Hydrospray or approved equal.
- 2.1.21 Power Washer: Spray equipment for saturation of asbestos-containing material with amended water for cleaning of surfaces in abatement work area after asbestos removal, capable of delivering an airless stream of water at a pressure of not less than 1200 psi or exceeding 2500 psi.
- 2.1.22 Fine Atomizing Spray Nozzle: Nozzle for airless sprayer capable of delivering not less than 1 gallon per minute of fine particle spray of amended water.
- 2.1.23 Garden Sprayer: A hand pump type pressure-can garden sprayer fabricated out of either metal or plastic, equipped with a metal wand at the end of a hose that can deliver a stream or fine spray of liquid of amended water under pressure.
- 2.1.24 Scaffolding: The type, erection and use of all scaffolding shall comply with all applicable OSHA provisions.
- 2.1.25 Temporary Lighting: Provide general service incandescent lamps or fluorescent lamps of wattage required for adequate illumination as required by the work. Protect lamps with guard cages grounded together to distribution panel or tempered glass enclosures.
- 2.1.26 Electrical Power Cords: Use only grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas of work.
- 2.1.27 Water Heater: ULC rated electric water heater appropriately sized for project to supply hot water for the Decontamination Unit shower. Activate from ground fault panel. Provide with relief valve compatible with water heater operation; pipe relief valve down to drip pan on floor with rigid piping. Drip pans shall consist of a 12" x 12" x 6" deep pan, made of 19 gauge galvanized steel, with handles.

- 2.1.28 Sump Pump: Provide totally submersible waterproof sump pump with integral float switch and shall have a manual switch. Provide unit sized to pump 2 times the flow capacity of all showers or hoses supplying water to the sump, through the filters specified herein when they are loaded to the extent that replacement is required. Provide unit capable of pumping debris, sand, plaster or other materials washed off during decontamination procedures without damage to mechanism of pump.
- 2.1.29 Shower: General shower shall be of the walk through type to permit use by one person at a time.
- 2.1.29.1 Shower Enclosure: Shower enclosure shall be of a minimum 24 gauge steel walls with baked enamel, galvanized steel, aluminum or stainless steel finish, 16 gauge floor with porcelain enamel finish, brass drain and tapping for mixing valve. Shower installation shall be complete with globe valve for tempered water with a shower head complete with orifice to restrict the flow to 2.5 USGPM.
- 2.1.29.2 Shower Pan: Provide one piece waterproof shower pan of minimum size 4' x 8' by 6" deep. Fabricate from seamless fibreglass minimum 1/16" thick reinforced with wood, 18 ga. stainless or galvanized steel with welded seams or, copper or lead with soldered seams.
- 2.1.29.3 Shower Head and Controls: Provide a factory-made shower head producing a spray of water which can be adjusted for spray size and intensity. Feed shower separately with water from hot and cold supply lines. Arrange so that control of water temperature, flow rate, and shut off is from inside shower without outside aid.
- 2.1.29.4 Hose Bib: Provide heavy bronze angle type with wheel handle, vacuum breaker, and 3/4" National Standard male hose outlet.
- 2.1.29.5 Filters: Provide multi-stage cascaded filter units on drain lines from showers or any other water source carrying asbestos-contaminated water from the work area. Provide units with disposable filter elements where the primary filter passes particle 20 microns and smaller and the final filter passes particles 5 microns and smaller. Connect so that discharged water passes primary filter and output of primary filter passes through secondary filter.
- 2.1.30 Type A Hoarding Wall: wall separating Occupied Area from Work Area consisting of the following:
- 2.1.30.1 wood or metal studs at 24" on centre with top and bottom plate fitted snugly to underside of ceiling. Provide gasket between top plate and ceiling as required.
- 2.1.30.2 2 layers of independently sealed rip-proof polyethylene sheeting on Work Area side of wall.

3. EXECUTION

3.1 Preparation Prior to Contamination

- 3.1.1 Perform pre-removal damage survey and submit to Asbestos Abatement Consultant.

- 3.1.2 General Contractor to complete the following in the Work Area to facilitate removal of asbestos-containing ceramic floor tile mortar base:
 - 3.1.2.1 Remove and dispose of partition stall walls in Washrooms.
 - 3.1.2.2 Disconnect sinks and associated plumbing in Washrooms.
 - 3.1.2.3 Disconnect toilets and associated plumbing in Washrooms.
- 3.1.3 Abatement Contractor is to remove and dispose of the vinyl baseboards in the Work Areas. Vinyl baseboards may be disposed of as clean waste.
- 3.1.4 The Owner will be responsible to re-locate all contents present within the Work Areas to a designated storage location in the building.
- 3.1.5 Disable air handling system affecting asbestos Work Area. The air handling system shall not be enabled until completion of work.
- 3.1.6 Protect surfaces, building fabric and items not specified for removal remaining within Asbestos Work Area, including walls, ceilings, windows, door openings, etc. with a minimum of one layer of rip proof polyethylene sheeting.
- 3.1.7 Doors to classrooms, offices, etc. (bordering the asbestos Work Areas) are to be removed or temporarily secured open in order to facilitate the removal of asbestos-containing ceramic floor tile mortar base from the corridors.
- 3.1.8 Door openings to classrooms, offices, etc. (bordering the asbestos Work Areas) to be sealed with a minimum of one (1) layer of rip proof polyethylene sheeting. Provide additional layers of polyethylene and/or wood or metal supports as required.
- 3.1.9 Seal floor drains in Washrooms with tape.
- 3.1.10 Existing lighting may be utilized in Work Area provided it is sealed with clear polyethylene and tape.
- 3.1.11 Provide additional temporary lighting in the Work Area as required.
- 3.1.12 Install Waste and Worker Decontamination Facility for each of the Work Areas. Worker Decontamination Enclosure System shall comprise of an Equipment and Access Room, a Shower Room, and a Clean Room, as follows:
 - 3.1.12.1 **Equipment and Access Room:** build an Equipment and Access Room between Shower Room and work areas, with two air locks, one to the Shower Room and one to work areas. The Equipment and Access Room shall be large enough to accommodate the storage of work boots, or any other protective clothing that might be used again, and at least three workers allowing them sufficient space to undress comfortably.
 - 3.1.12.2 **Shower Room:** build a Shower Room between the Clean Room and Equipment and Access Room, with two air locks, one to the Clean Room and one to Equipment and Access Room. Provide a constant supply of hot and cold water. The Shower Room shall have individual controls inside the room to regulate water temperature and flow. Provide piping and connect to water sources and drains. Pump waste water through a 5 micrometre filter system acceptable to Consultant before directing into drains. Provide soap, clean towels and appropriate containers for disposal of used respirator filters.
 - 3.1.12.3 **Clean Room:** build a Clean Room between the Shower Room and clean areas outside of enclosures, with two air locks, one to outside of enclosures and one

to Shower Room. Provide lockers or hangers for workers street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install a mirror to permit workers to fit respiratory equipment properly, and sufficient hangers and hooks.

- 3.1.12.4 Construct Worker Decontamination Enclosures as follows:
 - 3.1.12.4.1 Build suitable framing for enclosures, and line with polyethylene sheeting sealed with tape. Framing shall be constructed of 2" x 4" wood or metal studs at 24" O.C (max.) with 2" x 4" sill and top plates fastened with metal fasteners. Use 2 layers of rip-proof polyethylene on floors. Use 2 layers of polyethylene sheeting on walls and ceiling. Exterior to be covered with rigid sheathing (drywall) taped at seams and joints (not mudded). Provide solid door entry to decontamination facility complete with lock-set. Provide duplicate keys to project consultant.
 - 3.1.12.4.2 Build curtained doorways between enclosures.
 - 3.1.12.4.3 Provide viewing port into Work Area.
- 3.1.13 Erect Type A walls separating Asbestos Work Area from Occupied Areas.
- 3.1.14 Supply water as required for Asbestos Work Area and Decontamination Facilities. Water will be supplied by the Owner from existing potable water system. Contractor is responsible for all fittings. Contractor shall install using vacuum breakers or other backflow preventer as required by local authority.
 - 3.1.14.1 Water supply shall be by means of high-pressure hose and fittings. A master shut-off valve shall be installed adjacent to, and on the clean side, of the decontamination facility. Any hose and hose connections must be for high pressure only and downstream of the master shut-off valve and is not to be left under pressure unattended. Maintain hose connections and outlet valves in leak-proof condition. Where finish work below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize the possibility of water damage. Drain water promptly from pans as it accumulates.
- 3.1.15 Provide and install drainage facilities from temporary shower.
- 3.1.16 Provide and install drainage in removal work areas as required.
- 3.1.17 Provide and install a filtration system to filter all water to be disposed of from the removal and decontamination area.
- 3.1.18 Pre-clean all surfaces in the Asbestos Work Area, using a HEPA vacuum or damp cloth prior to installing protection.
- 3.1.19 Fire alarms, heat detectors, and smoke detectors will remain active. Maintain emergency and fire exits from work areas, or establish alternative exits satisfactory to Fire Commissioner of Canada and Provincial Fire Marshall.
- 3.1.20 Provide a fire extinguisher at each emergency exit and in both sides of the decontamination facilities.
- 3.1.21 Install temporary lighting in all work areas at levels that will provide for a safe and efficient use of the work area. Install battery powered emergency lights so as to Light exit routes through Asbestos Work Area.
- 3.1.22 Establish negative pressure in Asbestos Work Areas as follows:

- 3.1.22.1 Distribute negative air filter/fan units evenly around the Asbestos Work Area. Remove windows and replace with 1/2" plywood with appropriately sized openings for exhaust. Switch the negative air pressure system to the "ON" mode and operate continuously until final completion of the work, including final cleanup. Exhaust air to the outside of the building using sealed ducting. A spare negative air unit will be fully installed and ready to operate as a backup unit. The negative air pressure system must have the capacity to exchange air volume of the work area three times per hour and maintain a minimum of 0.03 inches of water gauge differential. Operate negative pressure system continuously from the time the first polyethylene is installed to seal openings until final completion of the work including final cleanup and air testing. Replace pre-filters and HEPA filters as required and on a regular basis to maintain even and constant draw across negative air unit. Do not discharge negative air ducting with-in 25 feet of building access points. Replace windows removed for discharge panels upon completion of project.
- 3.1.22.2 Leak test negative air units in place using DOP method.
- 3.1.22.3 Do not discharge negative air units into Occupied Areas unless specified or with written approval from Asbestos Abatement Consultant.
- 3.1.22.4 Provide continuous reading pressure differential monitor to monitor site pressure for duration of project.
- 3.1.23 Isolate at panel and disconnect or ground existing power supply to Asbestos Work Area where necessary. Power supply to remaining areas of building must not be disrupted during work of this section.
- 3.1.24 Post signs at locations where access to a sealed Asbestos Work Area is possible. Signs shall be installed at Curtained Doorways leading directly into a contaminated area.
- 3.1.25 Such signs shall read:
- CAUTION**
- Asbestos Hazard Area
No Unauthorized Entry
Wear assigned protective equipment
Breathing asbestos dust may cause serious bodily harm***
- 3.1.26 Do not proceed to Asbestos Removal without written notification from Consultant. Provide Consultant with 24 hours notification of request for review of site preparations.

3.2 Asbestos Removal

- 3.2.1 Apply the specified wetting agent to the asbestos-containing ceramic floor tile mortar base using an airless spray equipment capable of providing a "mist" application to prevent release of fibres. Saturate the asbestos material sufficiently to wet it to the substrate without causing excess dripping.
- 3.2.1.1 Spray the asbestos material repeatedly during work process to maintain saturation and to minimize asbestos fibre dispersion. Score the outer surface where water does not penetrate the outer layers.
- 3.2.2 Remove the saturated asbestos material in small sections. Do not allow saturated asbestos to dry out. As it is being removed, pack the material in

sealable plastic bags 0.15 mm minimum thick and place in labelled containers for transport.

- 3.2.2.1 Place enough material into bags that makes the bags easy to handle and do not over fill. Seal all filled waste containers with a layer of tape.
- 3.2.3 Collect waste water from the floor, do not allow it to pool.
- 3.2.3.1 Mist the air continuously where asbestos is being disturbed with amended water using one dedicated airless sprayer equipped with a fine atomizing nozzle.
- 3.2.3.2 If fibre levels exceed 2.0 f/cc, then additional dedicated sprayer(s) will be required as directed by the Asbestos Abatement Consultant.
- 3.2.3.3 Contain waste water in sealable plastic containers, suitable for transport and disposal without leaking or dispose of by pumping into a settling tank, filtering the water using specified filters, and then pumping into a sanitary sewer.
- 3.2.4 Clean external surfaces of the waste bags thoroughly by wet sponging. Remove from immediate working area to Equipment and Access Chamber of the Decontamination Unit.
- 3.2.4.1 Clean external surfaces of the waste bags thoroughly again by wet sponging before moving containers to Decontamination Shower chamber.
- 3.2.4.2 Once in the Shower Chamber, place waste bag into a second poly waste bag and seal the bag with tape. Ensure that containers are removed from the Decontamination Unit by workers who have entered from uncontaminated areas dressed in clean coveralls.
- 3.2.5 Use power tools, grinders, scrapers or any other mechanical equipment as required to remove the asbestos-containing fibrous backing material debris remaining adhered to the adhesive.
- 3.2.6 After completion of scraping removal work, all surfaces from which asbestos has been removed shall be wire brushed and wet-sponged to remove all visible material. During this work the surfaces shall be kept wet.
- 3.2.7 After wire brushing and wet sponging to remove visible asbestos, wet clean the entire work area including the Equipment and Access Room, and equipment used in the process.
- 3.2.7.1 Pre-filters on negative air units shall be treated as asbestos waste and disposed of accordingly. Place new filter and pre-filters on Negative Air Units.
- 3.2.8 Do not proceed with work of applying Lock-down Agent without obtaining written permission from the Asbestos Abatement Consultant indicating a Visual Clearance Inspection has been performed and the site is satisfactory to the Consultant. Provide a minimum of 24 hours notice to consultant for the need of a visual clearance inspection.

3.3 Application of Lock-down Agent

- 3.3.1 After completion of the final cleaning and after the Asbestos Abatement Consultant has passed a Visual Clearance Inspection, spray sealant (approved by the Asbestos Abatement Consultant) on all surfaces in the Asbestos Work Area.

- 3.3.2 Allow a 24 hour settling period, and for the sealer to dry. During this settling period, no entry or activity will be permitted in the work area.
- 3.3.3 Obtain written permission from Asbestos Abatement Consultant to proceed with Asbestos Work Area Dismantling following acceptable clearance air monitoring results of 0.01 f/mL. Should clearance air monitoring results exceed 0.01 f/mL, the contractor will, at no cost to the owner, re-clean the entire Asbestos Work Area and apply another coat of Lock Down Agent.

3.4 Asbestos Work Area Dismantling

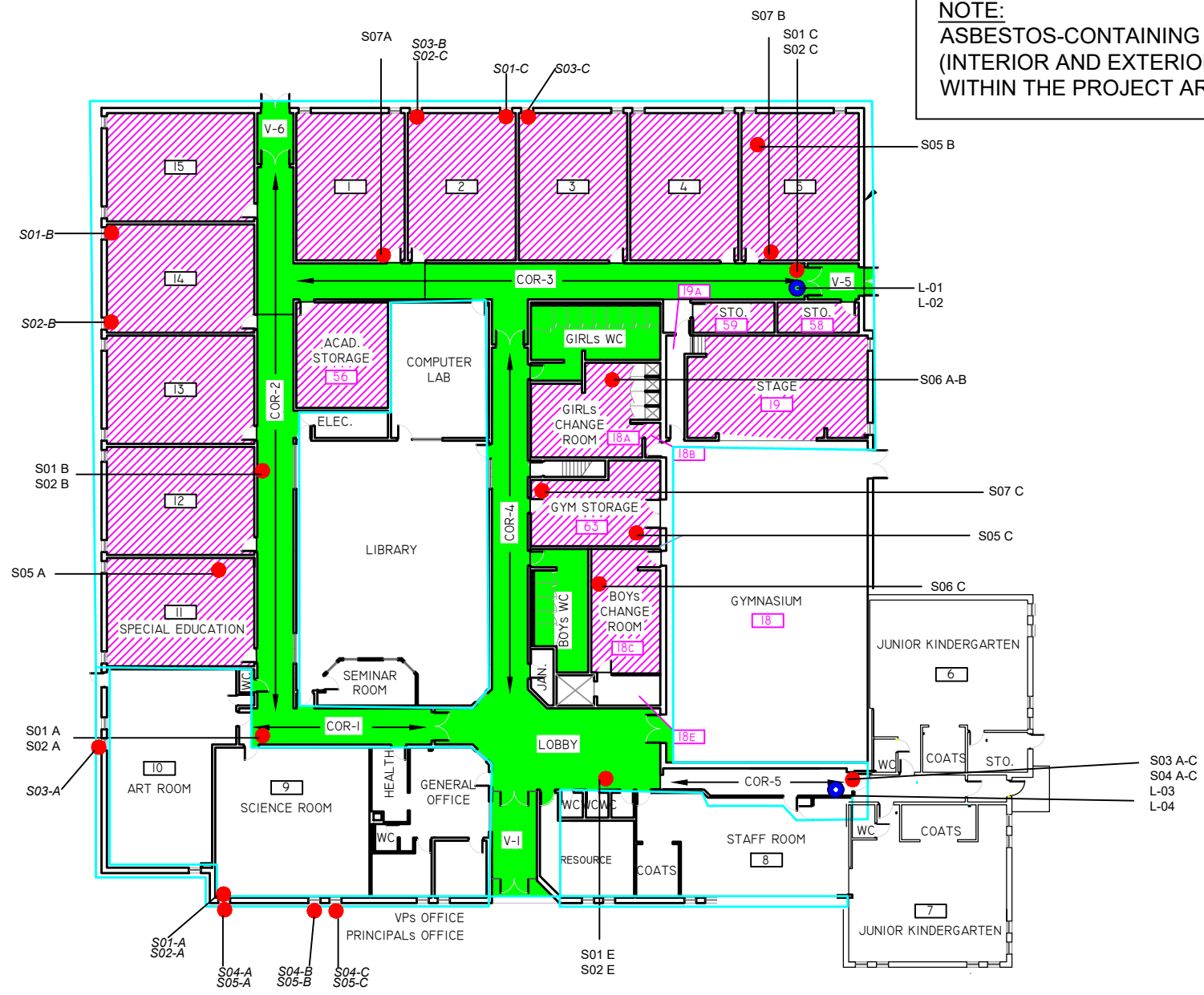
- 3.4.1 Maintain the perimeter seal and use Worker Decontamination Facility.
- 3.4.2 Operate negative air units during teardown is completed.
- 3.4.3 Remove all polyethylene, tape, and enclosures from Asbestos Work Area.
- 3.4.4 Remove visible fibres or residue found during removal of polyethylene using a HEPA vacuum.
- 3.4.5 Place Polyethylene, tape, cleaning material, clothing and other contaminated waste in asbestos waste containers and dispose of as asbestos waste.
- 3.4.6 Seal vacuum hoses and fittings, flexible ductwork and all tools used in contaminated work site in 6-mil polyethylene bags prior to removal from Work Area.
- 3.4.7 Wash equipment used in contaminated Asbestos Work Area to remove all asbestos contamination, or double bag for transportation prior to being removed from Asbestos Work Area, via waste and equipment decontamination facility.
- 3.4.8 Clean up Asbestos Work Area, Equipment and Access area, washing/Showering Room, and other enclosures that may be contaminated.
- 3.4.9 Remove polyethylene protection and hoarding walls where hoarding walls separate occupied areas from Work Area.
- 3.4.10 Remove polyethylene sheeting from contaminated side of decontamination facilities.
- 3.4.11 Wash and mop with clean water all surfaces in the Asbestos Work Area.
- 3.4.12 Remove all temporary lights, ground fault panels and Negative Pressure Units.
- 3.4.13 Immediately upon shutting down negative air units, seal air inlet grill and exhaust vent with polyethylene and tape.
- 3.4.14 Remove decontamination facilities, platforms and platform scaffolding, tunnels, etc.
- 3.4.15 Damp mop and clean with HEPA vacuum Occupied Areas previously below platforms, tunnels and decontamination facilities with HEPA vacuum.

3.5 Re-establishment of Objects and Systems

- 3.5.1 Make good at completion of work, all damage not identified in pre-removal survey.

End of Section

NOTE:
 ASBESTOS-CONTAINING WINDOW PUTTY
 (INTERIOR AND EXTERIOR) IS PRESENT
 WITHIN THE PROJECT AREA.



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PROJECT NO.:
21384
 Drawn By:
W. Davidson
 Checked By:
J. De Sousa

SAMPLE LOCATIONS		CONFIRMED ACM	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
● (Red)	ASBESTOS BULK SAMPLE: S##	■ (Green)	ACM CERAMIC TILE MORTAR BASE
● (Blue)	LEAD BULK SAMPLE: L##	▨ (Pink Hatched)	ACM VINYL FLOOR TILE
		□ (Cyan Outline)	OUTLINE OF SURVEYED AREA
		NOTE	WINDOW PUTTY (INTERIOR AND EXTERIOR)

Designated Substance Survey
 Halton Catholic District School Board
 Holy Family Catholic School
 1420 Grosvenor Street, Oakville
 First Floor Plan

SCALE
 NTS
 SHEET
 DS-01
 DATE:
 January 2024

